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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Response to Amendment/Arguments

1. By amending claim 1 to incorporate the limitations of dependent claim 3, the scope of the remaining dependent claims is changed. Therefore, the proposed amendment raises new issues that would require further search and/or consideration.

2. The applicant argues that Northrop does not disclose or even imply that the adsorbed/desorbed gases are in direct contact with silicon. The examiner disagrees because Northrup discloses that "The porous silicon layer 27 is exposed to an adsorbent (gas or liquid) followed by increase in temperature by heater 28 which causes the gas or liquid to desorb from layer 27" (See column 4, lines 50-52). Therefore, Northrup clearly discloses gas that is directly absorbed and desorbed on the porous silicon.

3. The applicant also argues that Winstel merely discloses a valve for closing the container 4, and does not disclose a control system for regulating storage of hydrogen into and retrieval of hydrogen from the hydrogen storage member. The examiner disagrees because claims are given the broadest reasonable interpretation during examination. Since a valve is capable of regulating storage of hydrogen into and retrieval of hydrogen from the storage member, it meets the claim. In addition, it is well known in the art that a valve can be controlled by a controller to regulate the flow of a gas.

4. The applicant also argues that silicon waste obtained from a silicon process waste stream recited in claim 24 generally does not contain crystallinity. Further, the

applicant also argues that Northrup discloses the use of crystalline silicon, and Northrup does not disclose or suggest that waste silicon could be useable in Northrup's process. Firstly, the statement that silicon waste generally does not contain crystallinity appear to a statement of the applicant's opinion and not a statement of fact. Since there is no evidence to show that silicon waste consists of only non-crystalline silicon, it is contended by the examiner that silicon waste does contain some amount of crystalline silicon. Secondly, there is no evidence to show that waste silicon is not useable in Northrup's process. For these reasons, Northrup et al still reads on claim 24.

5. The applicant also argues that Kornilovich teaches that the storage medium is for neutral/molecular hydrogen, and not elemental (monatomic) hydrogen as taught and claimed by the applicants. According to the applicant's specification, "Elemental hydrogen" as used herein means either the hydrogen dimer molecule H_2 or the individual hydrogen atom H having no net valence charge (See page 6, lines 17-18). Therefore, the term "elemental hydrogen" as recited in the claims can also be interpreted as a hydrogen molecule H_2. Further, the applicant's specification also discloses that the concept of storing individual hydrogen atoms on a silicon substrate is based upon theory (See page 6, lines 20-22). Therefore, there is no evidence to show that individual hydrogen atoms are stored on the silicon substrate.

6. The applicant also argues that the neutral/molecular hydrogen is stored on functionalized organic molecules on the exterior of the silicon nanowire, and not directly in the silicon column itself as required by applicant's invention in claim 8. The examiner disagrees because Kornilovich discloses that "the surface of the organic molecule

branches, not only the surface of the stem nanowire that is used to physisorb gas molecules such as neutral hydrogen molecules" (See paragraph [0013]). Although Kornilovich discloses that hydrogen is stored on the organic molecules, it also implies that hydrogen is also stored on the silicon nanowires.

7. The applicant also argues that Kornilovich teaches that the neutral/molecular hydrogen is absorbed by physisorption, and not chemisorption as taught by applicants. The argument is not commensurate with the scope of the claims because there are no limitations in the claims that require chemisorption of hydrogen.

8. The applicant also argues that Kornilovich's use of silicon is unnecessary. The examiner disagrees because Kornilovich specifically discloses the use of silicon nanowire as a hydrogen storage medium (See paragraph [0010]).

9. The applicant also argues that Kornilovich does not teach silicon columns that have surfaces on the (111) plane and silicon columns that have a minimum energy configuration suitable for forming a crystal as recited in claims 10 and 11. Kornilovich discloses that "silicon nanowire may be grown in a conventional chemical vapor deposition process" (See paragraph [0013]). Therefore, it is contended by the examiner that silicon nanowires formed by chemical vapor deposition inherently have surfaces on the (111) plane and have a minimum energy configuration suitable for forming a crystal. Burden is on the applicant is show differences in product comparison.

TC

/Jonathan Crepeau/

Primary Examiner, Art Unit 1795